Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Digital Broadcast Copy Protection	)	MB Docket No. 02-230
	)	

Joint Response of
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Principal Authors of GNU Radio
to Notice of Proposed Rule Making Dated August 9, 2002

Introduction

As the authors of GNU Radio[1], a free software[2] toolkit for building and deploying software radios (SDR), we strongly oppose the adoption of the so-called "broadcast flag."

GNU Radio is one of the hundreds of thousands of open source software projects around the world.[3] These open source projects are the application of the scientific method to software. Progress occurs by the publication and vigorous debate of the pros and cons of a particular piece of work, point of view, or theory.

We object to the Broadcast Flag for the following reasons:

1. It is not needed.

High production value content is being broadcast today. Therefore the broadcast flag is *not* a necessary condition for high production value content.

If content producers are truly afraid of widespread copying, they have the right to keep their content off of the air. But the fact is that they currently allow the broadcast of their content, because it is profitable to do so. This content is, and will continue to be, available in other forms which are also easily copyable, such as DVDs and VHS tapes. There is no shortage of movies on VHS and DVD despite the ease with which they can be copied.

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1 http://www.gnu.org/software/gnuradio

2 It is licensed under the GNU General Public License. Free software implies that anyone can use, modify, and/or redistribute the code without cost. Source code is, of course, included.

3 "Source Forge" alone hosts over 50,000 projects at http://www.sourceforge.net

2. It won't work.

The broadcast flag won't work. It is easy to circumvent with foreign equipment, pro studio equipment, existing DTV receiver cards, test equipment -- or free software.

3. It can't accomplish it's stated goal.

Small numbers of circumventers will totally defeat the stated goal of preventing Internet circulation of clean copies of digital TV broadcasts. This argument is fully explored in the "Darknet" paper by Biddle, et. al.[4]

4. It stifles competition and innovation.

The real reason that HDTV is not more widely deployed in American households is that the available receivers are expensive. If the goal of the FCC is to encourage the transition to HDTV, then this can best be accomplished by reducing the cost of an HDTV receiver.

The GNU Radio project has created a working software defined radio (SDR) implementation of an HDTV transmitter and receiver. This software is free software, and runs on common computers. The only other component necessary for HDTV reception is a simple tuner and sampler which could be built and sold for less than $50 in moderate quantities today. GNU Radio's ATSC receiver would be prohibited as a "non-compliant receiver" if the broadcast flag proposal is implemented. It is impossible for *any* free software to fulfill the "robustness requirements", as the source code is readily available and easily modified. Our ability to innovate and to create will be taken away.

By outlawing an under $50 HDTV receiver, as well as all others not made by a small group of electronics companies, the Commission will be creating new barriers to entry in the market for ATSC receivers. This can only increase costs to end users, and hamper the adoption of HDTV. The very rule intended to promote the transition will delay it.

Crystal radios were the means by which thousands of future technicians and engineers were introduced to the world of radio and electronics. It helped create that core group of people who created many entire industries, and contributed to this country's technological and economic strength. Open Source Software Radio is the crystal radio of the 21st century -- a simple, cheap way to discover the world of telecommunications. The broadcast flag proposal would effectively outlaw it by making interesting waveforms like ATSC off-limits. Where would we be today if crystal radios were outlawed in the 1930's?

5. It curtails lawful uses of broadcast programming.

Broadcasters have been given billions of dollars worth of the public's spectrum, with little more demanded of them than to make the programming available to all who want it. This

4 Biddle, et. al., “The Darknet and the Future of Content Distribution” http://crypto.stanford.edu/DRM2002/darknet5.doc

is why they may not encrypt the programming.

If the Broadcast Flag proposal is implemented, the public's right to "fair use" will be severely curtailed. "Fair use" is by definition "unauthorized use". Counter-arguments indicating the freedom to copy content within the "secure home network" are specious as long as users and developers are prohibited via licensing schemes or patents from building innovative tools to affect their fair use.

6. The First Amendment protects software.

Software is Free Speech. Software is a work of authorship, written by humans, read by humans, and an area of scientific research. Its publication cannot be restricted under the 1st Amendment, even under a "national security" jurisdiction.

> Bernstein v. State, 922 F. Supp. 1426, 1435 (N.D. Cal. 1996)
> Bernstein v. USDOJ, 176 F. 3d at 1132 (9th Cir. 1999)
> Junger v. Daley, 209 F.3d 481 (6th Cir. 2000)

Any agency preventing publication must:

- Clearly and publicly define legal versus illegal
- Prosecute violators rather than "deny them licenses to publish"
- Prove to court that that publication would "surely result in direct, immediate and irreparable damage to our Nation and its people." (Pentagon Papers, 1971).

Software authors will not stand to be censored. Open source programmers will challenge any attempted ban, and win.

Summary

It is not the mandate of the FCC to protect a small group of companies from an *imagined* threat to their business model posed by the public's legitimate rights to the airwaves. It is the duty of the FCC to protect the rights of the public, to foster innovation and competition, and maximize the utility of the spectrum for all. Mandating the broadcast flag is wrong. It will not fulfill its intended goal, and will slow down the adoption of HDTV.

Respectfully submitted,

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